🧭Introduction

This system is designed to track, monitor, and manage equipment, meters, energy usage, real-time IoT telemetry, service events, and downtime across multiple sites. Accurate data entry at each stage is crucial to assess equipment health, calculate downtime costs, plan preventative maintenance, and manage financial and operational risk.

A comprehensive kitchen health inspection checklist is included —to ensure compliance with health regulations. Key areas include verifying food safety management systems (HACCP - Hazard Analysis and Critical Control Point), monitoring temperatures, ensuring staff hygiene, preventing pest access, and maintaining clean, sanitised surfaces.

💡 **Important:** Each site, meter, and equipment record must be maintained.

🏗️ System Workflow: The Step-by-Step Process

The order in which data is entered is critical for the system to function correctly: **Sites → Meters → Equipment → Meter Readings → Service Events → Downtime Events → Analytics & Dashboards**.

Step 1: 🏢 Maintain Sites

📌Purpose

Sites are the foundation of the system. Each site must have its own record before adding meters or equipment.

Key Fields

- Site Name
- Address
- Estimated cost of downtime (£/hour)

Actions

- Add Site
- Edit Site
- Delete Site

💡 Best Practices

- Configure all active sites first and ensure downtime costs are realistic, as this drives the financial risk modeling on your dashboard
- Each site must be unique and accurate.

Step 2: ⚡ Maintain Meters

📌Purpose

Meters track energy usage for electricity, gas, or water at each site.

Key Fields

- Site
- Meter Name
- Meter Type
- Unit
- Notes

Actions

- Add Meter
- Edit Meter
- Delete Meter

💡 Best Practices

- Always link meters to the correct site.
- Use consistent naming.
- Ensure unit matches meter type.

Step 3: 🔧Add Equipment

📌Purpose

Equipment must be assigned to a site and a meter.

Key Fields

- Equipment Name
- Site
- Meter
- Category
- Manufacturer / Model / Serial
- Install Date
- Expected Life / Downtime

- Warranty Expiry / Maintenance Period
- Energy Type / Rated Power / Usage
- Criticality
- IoT details (Internet Of Things)

Actions

- Create Equipment
- Edit Equipment
- Cancel

💡 Best Practices

- Link every piece of equipment to a site and a meter.
- Record realistic usage and downtime estimates.
- Ensure energy data aligns with actual specifications.

Step 4: ⚡ Meter Readings

📌Purpose

Track energy consumption and cost monthly for each meter.

Key Fields

- Meter
- Month
- kWh
- Cost (£)

Actions

- Add Reading
- Edit Reading
- Delete Reading

💡 Best Practices

- Enter readings monthly.
- Ensure correct site and meter selection.
- Keep estimates realistic.

Step 5: 🛠️ Service Events

📌Purpose

Record all service and maintenance events for equipment.

Key Fields

- Service Date
- Service Type
- Provider
- Cost (£)
- Next Due Date
- Notes

Actions

- Add Service Event
- Edit Service Event
- Delete Service Event

💡 Best Practices

- Record service immediately.
- Choose the correct service type.
- Include detailed notes.

Step 6: ⏱️ Downtime Events

📌Purpose

Track periods when equipment is unavailable.

Key Fields

- Start / End Date & Time
- Downtime Reason
- Cost (£)
- Impact Notes

Actions

- Add Downtime Event
- Edit Downtime Event
- Delete Downtime Event

💡 Best Practices

- Log downtime immediately.
- Use precise reasons.
- Include notes on operational or financial impact.

Step 7: 📊 Using the Dashboard

Overview

Aggregates all data from sites, meters, equipment, service events, and downtime.

Sections

- Summary Cards
- High-Risk Equipment Table
- Charts
- Full Equipment List

💡 Best Practices

- Review high-risk equipment regularly.
- Use charts to identify cost trends.
- Update records consistently.

Step 8: 📈 Energy Comparison Analytics

This screen moves beyond simple tracking to active benchmarking and cost-reduction analysis.

📌 Purpose

To compare energy performance across different meters or sites to identify anomalies, verify the ROI of new equipment, and spot uncompetitive energy tariffs.

🧭 How to Use

1. **Select Baselines:** Choose a "Total Usage" view or a specific Site/Meter from the primary dropdown.
2. **Add Comparison:** Select a second Site/Meter in the "vs" dropdown to overlay their data.
3. **Analyze Trends:** Use the dual-axis line graph to see how Usage (KWh) relates to Cost (£).

- **Best Practice:** Use **Comparison Mode** to benchmark similar sites. If KWh usage is identical but costs differ, investigate your energy contracts.

Step 9: 📡 IoT Real-Time Monitoring

The IoT Dashboard provides a live "heartbeat" of your kitchen operations.

- **Live Telemetry:** Monitor temperature and energy flow against safety thresholds.
- **Health Statuses:**
    - 🔴 **Critical Alert:** Immediate risk to food safety; requires acknowledgment.
    - 🟡 **Warning:** Reading is drifting outside the optimal range.
    - 🟢 **Online:** Device is connected and operating within parameters.
    - ⚬ **Offline:** Device has lost connectivity (check site Wi-Fi/power).
- **Pipeline Reliability:** A scientific score (%) comparing received signals against expected frequency to ensure data integrity.

Step 10: 📈 Historical Analysis (IoT Trends)

Access historical data for 24 hours, 7 days, 30 days, or 180 days to identify long-term patterns.

- **Performance Drift:** Use the 30-day view to spot equipment slowly struggling to hold temperature.
- **Seasonality:** Use the 180-day view to identify how ambient temperature affects energy consumption.
- **Data Smoothing:** For longer periods, the system aggregates points into "Average Readings" to highlight trends over minor fluctuations.

Step 11: 🏗️ HACCP

🏛️ Compliance Hub (Checklists)

The **Compliance Hub** is the central repository for site safety, hygiene, and operational audits.

- **How it Works:** Users select a **Site** and a **Checklist Template** (e.g., Opening, Closing, or Legal) to begin a task list.
- **Evidence Collection:** Individual tasks may require a **Numeric Reading** (e.g., temperature in °C) or a **Photo** captured directly via the device camera.
- **Status & Outcomes:** Completed checklists are submitted with an outcome of **Pass**, **Fail (Breach Found)**, or **Flagged (Action Required)**.
- **Reminders:** The system tracks compliance frequency and alerts managers to checklists that are overdue or have never been completed.

🛠️ Checklist Configuration (Management)

Administrators can build custom compliance workflows through the **Manage Templates** tool.

- **Task Definition:** Define descriptions, evidence requirements, and "Safe Range" limits (Min/Max bound).
- **Favourites:** Frequently used checklists can be "starred" for quick access on the mobile dashboard.

Step 12: 🎨 Kitchen Designer

The **Kitchen Designer** is a visual CAD tool used for planning and optimizing commercial kitchen layouts.

- **Purpose:** To assist in bespoke kitchen design by positioning high-end catering equipment—such as ovens, ranges, and refrigeration—within a digital floor plan.
- **Integration:** Designed layouts help ensure that utility services (water, gas, electricity) are correctly positioned prior to equipment delivery and installation. Air flow to extractor fans can also be modeled.

Step 13:📑 Activity Log (History)

This screen provides a transparent audit trail of all changes within the system.

📌 Purpose

To provide accountability and data recovery by answering "Who changed what, and when?"

🧭 How it Works

- **Action Badges:** Actions are color-coded: **Green (Create)**, **Blue (Update)**, and **Red (Delete)**.
- **Data Deep-Dive:** Click "View Data" to see the raw JSON snapshot of the record at the time of the change.
- **Best Practice:** Regularly scan for "Delete" actions to ensure data integrity and investigate accidental removals.

🧮Final Notes

- Step order matters: Sites → Meters → Equipment → Meter Readings → Service Events → Downtime Events → Dashboard
- Consistent naming conventions improve navigation and auditing.
- **Accuracy:** The system's "Projected Downtime Cost" is only as accurate as the data you provide.
- **Audit Trail:** Use the **Activity Log** to track who changed what and when, ensuring data integrity.